Special Issue

Advanced Power Converters for Electric Vehicle Charging and Medium-Voltage Applications

Message from the Guest Editor

This Special Issue highlights recent advances in power converters for EV charging (onboard/offboard) and medium-voltage applications, including distribution systems, renewables, and industrial drives. Contributions on modelling, control, hardware design, grid compliance, and reliability are welcome, with both theoretical and experimental work encouraged. Topics of interest include (but are not limited to) the following:

- High-efficiency and high-power-density EV chargers (AC/DC and DC/DC);
- Bidirectional converters for vehicle-to-grid (V2G) and grid-to-vehicle (G2V) systems;
- Multi-level and modular converter topologies for MV applications;
- Control and modulation techniques for fast charging and MV converters;
- The integration of wide bandgap devices (SiC and GaN) and hybrid modules;
- Medium-voltage DC (MVDC) architectures and protection schemes;
- Grid-forming, grid-following, and fault-tolerant control strategies;
- Electromagnetic compatibility (EMC) and thermal management in high-power systems;
- Standards, testing, and compliance for EV charging and MV converters;
- Hardware-in-the-loop (HIL) testing and digital twin approaches for validation.

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Message from the Editor-in-Chief

Energies is an international, open access journal in energy engineering and research. The journal publishes original papers, review articles, technical notes, and letters. Authors are encouraged to submit manuscripts which bridge the gaps between research, development and implementation. The journal provides a forum for information on research, innovation, and demonstration in the areas of energy conversion and conservation, the optimal use of energy resources, optimization of energy processes, mitigation of environmental pollutants, and sustainable energy systems.

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